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ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2
19301A 6SRS MISSILE NOS. V-3/V-4, ROUND NOS. V-3/V-4 (14 DECEMB--ETC(U)
MAR 78

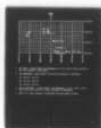
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of 19301A GSRS, Missile Numbers V-3/V-4, Round Numbers V-3/V-4, are presented in tabular form.		

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INTRODUCTION

19301A GSRS, Missile Numbers V-3/V-4, Round Numbers V-3/V-4, was launched from launcher 519 at LC-33, White Sands Missile Range (WSMR), New Mexico, at 1512/1518 HRS MST, 14 December 1977. The scheduled launch times were 1500/1501 HRS MST.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}\text{C}$), relative humidity, dew point ($^{\circ}\text{C}$), density (gm/m^3), wind direction, wind velocity and cloud cover were made at the LC-33 Met Site at T-0 mins.

(2) Anemometer data were provided from existing pole mounted and tower mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from RAPTS-T-9 pibals observation at T-0 mins as follows:

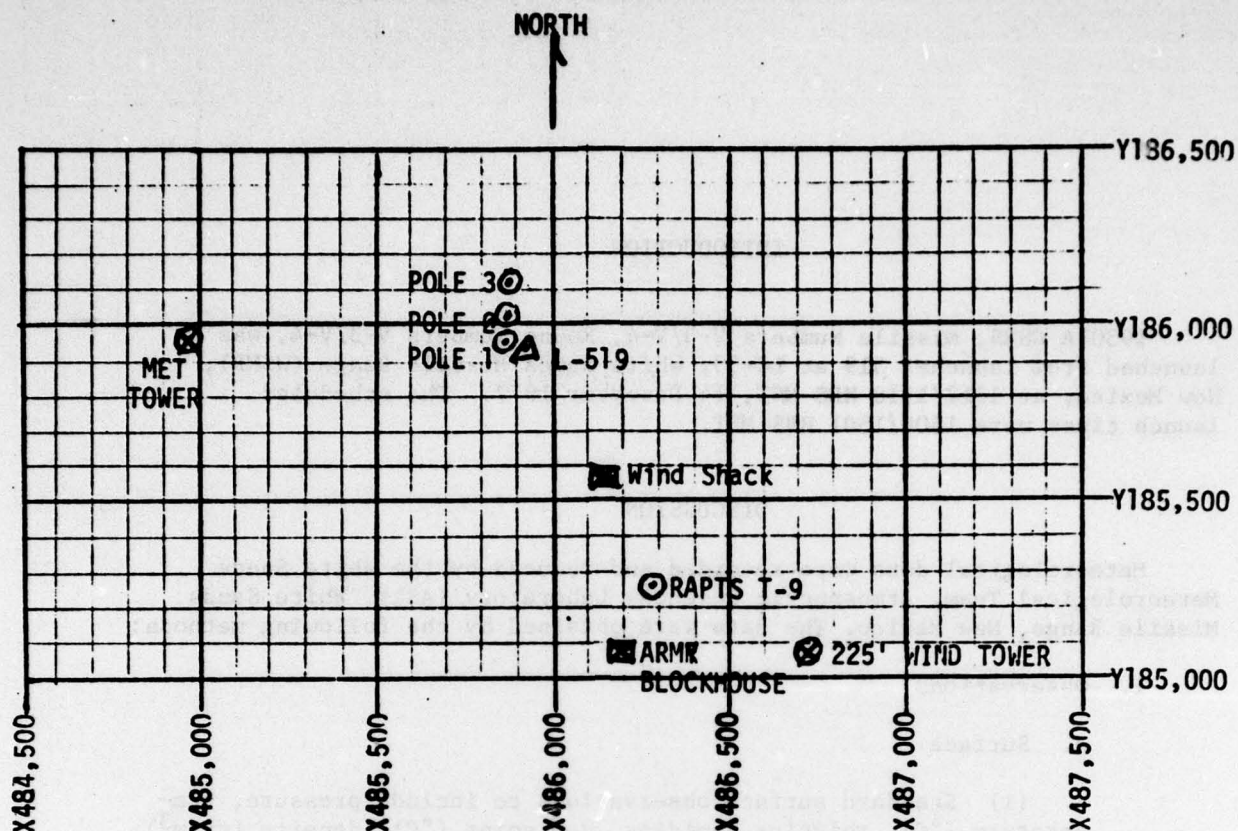
SITE & ALT.

LC-33 900 meters (15 meter incs)

APA 900 meters (30 meter incs)

SMR 900 meters (30 meter incs)

(2) Air structure data (rawinsonde) were collected at the SMR Met Site at T-0 mins. Data were collected from surface to 125% of apogee in 100 meter incs.



1. MET TOWER - 4 Bendix Model T-120 Anemometers at 12 ft, 62 ft, 102 ft and 202 ft with E/A recorders in Wind Shack.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders in Wind Shack
 - (a) Pole #1 - 38.7 ft
 - (b) Pole #2 - 53.0 ft
 - (c) Pole #3 - 83.6 ft
3. 225 FT WIND TOWER - 5 Bendix Model T-120 Anemometers at 35 ft, 88 ft, 128 ft, 168 ft and 200 ft with 5 X-Y visual indicators in Blockhouse.
4. RAPTS T-9 - Radar Automatic Pilot-Balloon Tracking System T-9 Radar

The data are presented in the following tabulations:

ELEVATION	3,983.0	FEET/MSL
PRESSURE	878.6	MBS
TEMPERATURE	19.9	°C
RELATIVE HUMIDITY	23	%
DEW POINT	-1.9	°C
DENSITY	1,043.53	GM/M ³
WIND SPEED/DIR	CALM	
CLOUD COVER	.4	Ci

TABLE I. SURFACE OBSERVATIONS TAKEN AT LC-33,
1500 HRS MST/14 DECEMBER 1977

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	0	0.0	1050	300	2.0
50	0	0.0	1100	317	2.0
100	0	0.0	1150	310	1.5
150	315	0.5	1200	300	1.5
200	315	1.5	1250	297	1.5
250	319	3.5	1300	293	1.5
300	317	5.5	1350	277	1.5
350	320	4.0	1400	267	2.0
400	320	3.5	1450	283	2.5
450	332	3.0	1500	293	2.5
500	341	3.0	1550	302	2.5
550	346	2.0	1600	312	2.5
600	360	1.5	1650	299	3.0
650	343	1.0	1700	292	3.5
700	337	1.0	1750	298	4.5
750	325	1.0	1800	302	5.0
800	321	1.5	1850	300	5.0
850	298	1.5	1900	301	3.5
900	284	1.0	1950	287	4.5
950	286	2.0	2000	297	6.5
1000	288	2.5	2050	296	7.5

TABLE II. RAPTS-T-9 PILOT-BALLOON-MEASURED WIND DATA,
LC-33 AT 1513 MST/14 DECEMBER 1977
19301A GSRS, MISSILE NOS. V-3/V-4, ROUND NOS. V-3/V-4

PIBAL RELEASE POINT WSTM COORDINATES:

X = 486,296.83 Y = 185,251.85 Z = 3,986.67

APPROXIMATELY: 813 FEET SOUTH OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
2100	294	8.0
2150	294	9.0
2200	293	9.5
2250	296	10.0
2300	296	10.0
2350	298	10.0
2400	299	10.0
2450	296	10.5
2500	298	10.0
2550	299	10.5

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
2600	302	10.0
2650	305	10.5
2700	307	10.5
2750	306	11.0
2800	304	11.0
2850	305	11.0
2900	305	11.5
2950	304	12.0
3000	305	12.5

TABLE II. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	0	0.0
50	117	0.0
100	117	.5
150	153	0.0
200	236	.5
250	004	1.5
300	011	3.0
350	019	2.0
400	034	1.5
450	050	1.0
500	101	.5
550	146	.5
600	180	.5
650	180	.5
700	180	0.0
750	187	1.0
800	184	1.5
850	165	1.0
900	143	1.0
950	132	1.5
1000	127	2.0

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
1050	146	1.5
1100	180	1.5
1150	188	1.5
1200	193	1.5
1250	177	1.5
1300	159	1.5
1350	157	1.0
1400	252	.5
1450	225	.5
1500	211	.5
1550	186	1.0
1600	175	1.0
1650	225	.5
1700	276	1.0
1750	274	1.5
1800	270	2.0
1850	276	2.0
1900	276	4.0
1950	264	4.5
2000	260	5.0
2050	270	5.0

TABLE III. RAPTS-T-9 PILOT-BALLOON-MEASURED WIND DATA
LC-33 AT 1519 MST/14 DECEMBER 1977.
19301A GSRS, MISSILE NOS. V-3/V-4, ROUND NOS. V-3/V-4

PIBAL RELEASE POINT WSTM COORDINATES:

X = 486,296.83 Y = 185,251.85 Z = 3,986.67

APPROXIMATELY: 813 FEET SOUTH OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
2100	279	6.0
2150	284	6.5
2200	288	6.5
2250	288	7.0
2300	289	7.5
2350	292	8.0
2400	292	8.5
2450	294	8.5
2500	297	8.5
2550	299	9.0

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
2600	300	9.0
2650	300	9.5
2700	299	9.5
2750	299	10.0
2800	300	11.0
2850	300	11.5
2900	300	11.5
2950	300	11.5
3000	300	11.5

TABLE III. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	030	06	2100	298	04
100	036	05	2200	343	05
200	044	04	2300	340	04
300	051	03	2400	321	05
400	048	03	2500	312	05
500	039	05	2600	302	05
600	047	04	2700	314	06
700	061	03	2800	328	05
800	079	02	2900	283	05
900	051	02	3000	286	04
1000	032	02	3100	286	04
1100	063	04	3200	293	05
1200	070	02	3300	306	05
1300	041	03	3400	297	04
1400	078	01	3500	310	07
1500	224	01	3600	298	10
1600	318	02	3700	295	10
1700	354	02	3800	294	09
1800	109	01	3900	295	10
1900	256	02	4000	310	12
2000	248	02	4100	325	10

TABLE IV. RPTS-T-9 PILOT-BALLOON-MEASURED WIND DATA
SMR AT 1515 MST/14 DECEMBER 1977
19301A GSRS, MISSILE NOS. V-3/V-4, ROUND NOS. V-3/V-4

PIBAL RELEASE POINT WSTM COORDINATES:

X = 472,441.28 Y = 214,137.54 Z = 3,999.00

APPROXIMATELY: 10 MILES N. OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
4200	295	11
4300	296	11
4400	299	12
4500	294	12
4600	294	12
4700	295	12
4800	291	12
4900	296	14
5000	295	13
5100	284	14
5200	283	15
5300	282	16
5400	280	17
5500	279	17
5600	279	17

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
5700	279	17
5800	278	17
5900	280	17
6000	279	15
6100	280	14
6200	278	18
6300	281	16
6400	280	19
6500	282	16
6600	281	19
6700	280	21
6800	278	22
6900	277	21
7000	276	21

TABLE IV. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	360	05
100	360	01
200	015	07
300	340	05
400	335	07
500	345	07
600	010	04
700	060	01
800	050	06
900	060	01
1000	150	04
1100	160	02
1200	150	07
1300	135	05
1400	165	02
1500	145	07

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
1600	175	05
1700	210	09
1800	235	10
1900	230	06
2000	220	11
2100	215	17
2200	215	15
2300	210	12
2400	230	13
2500	235	14
2600	240	12
2700	240	12
2800	245	11
2900	275	12
3000	285	13

TABLE V. RAFTS-T-9 PILOT-BALLOON-MEASURED WIND DATA,
APACHE AT 1545 MST/14 DECEMBER 1977
19301A CSRS, MISSILE NOS. V-3/V-4, ROUND NOS. V-3/V-4

PIBAL RELEASE POINT WSTM COORDINATES

X = 481,338.60 Y = 267,644.40 Z = 3,962.07

APPROXIMATELY: 16 MILES NORTH OF LAUNCHER

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

T-TIME (SEC)	SPEED (MPH)	DIR DEG
-30.0	02	247
-20.0	01	247
-10.0	01	247
-00.00	02	238
+10.00	01	259
+20.00	00	000
+30.00	00	000

TABLE VI. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE 38.7 FT
RELEASED FROM LC-33, AT 1500 MST/14 DECEMBER 1977
19301 GSRS, MISSILE NOS. V-3/V-4, ROUND NOS. V-3, V-4

WSTM COORDINATES: X = 485,874.29 Y = 185,958.90 Z = 4,018.74

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

T-TIME (SEC)	SPEED (MPH)	DIR DEG
-30.0	04	233
-20.0	04	233
-10.0	04	233
-00.00	05	233
+10.00	04	243
+20.00	03	267
+30.00	04	287

TABLE VII. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE 53.0 FT
RELEASED FROM LC-33, AT 1500 MST/14 DECEMBER 1977
19301A GSRS, MISSILE NOS. V-3/V-4, ROUND NOS. V-3/V-4

WSTM COORDINATES: X = 485,874.93 Y = 186,012.00 Z = 4,033.57

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

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GEODETIC COORDINATES
32.48034 LAT NEG
106.42307 LON NEG

SIGNIFICANT LEVEL DATA
3480060178
S M R
TABLE VIII.

STATION ALTITUDE 3997.30 FEET MSL
14 DEC. 77 1500 HRS MST
ASCENSION NO. 178

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		RFL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
878.8	3997.3	16.2	-6.1	21.0
850.0	4924.6	13.4	-10.4	18.0
824.2	5770.0	10.5	-13.5	17.0
815.5	6000.1	11.5	-12.7	17.0
763.3	7854.7	6.4	-16.8	17.0
722.8	9322.1	7.2	-16.9	16.0
700.0	10162.6	4.9	-14.5	23.0
684.3	10767.9	3.8	-11.7	31.0
635.8	12733.5	.4	-15.5	29.0
606.8	13955.6	-1.9	-25.0	15.0
586.2	14852.1	-4.0	-24.2	19.0
572.3	15470.3	-6.0	-19.3	34.0
500.0	18888.0	-13.4	-26.2	33.0
458.8	21013.5	-18.0	-31.3	30.0

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GEODETIC COORDINATES
32.48034 LAT NEG
106.42307 LON NEG

UPPER AIR DATA
3480000176
S M R
TABLE IX.

STATION ALTITUDE 3997.30 FEET MSL
14 DEC. 77
ASCENSION NO. 178
1500 HRS MST

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
3997.3	878.8	16.2	21.0	1056.3	663.2	.0	.0	1.000253
4000.0	878.7	16.2	21.0	1056.2	663.2	297.1	.0	1.000253
4500.0	863.1	14.7	19.4	1043.1	661.4	297.1	.5	1.000247
5000.0	847.7	13.1	17.9	1030.2	659.6	297.1	.9	1.000242
5500.0	832.4	11.4	17.3	1017.9	657.5	297.1	1.4	1.000238
6000.0	817.3	11.3	17.0	999.9	657.4	297.1	1.9	1.000233
6500.0	802.4	10.2	17.0	985.3	656.2	297.8	2.9	1.000230
7000.0	787.7	8.8	17.0	972.3	654.5	299.1	6.0	1.000226
7500.0	773.3	7.4	17.0	959.4	652.8	299.5	9.1	1.000222
8000.0	759.2	6.5	16.9	945.0	651.7	300.5	12.1	1.000218
8500.0	745.2	6.8	16.6	926.7	652.0	301.1	15.2	1.000214
9000.0	731.5	7.0	16.2	908.8	652.4	301.0	16.4	1.000210
9500.0	718.0	6.7	17.4	892.9	652.0	300.7	17.2	1.000207
10000.0	704.8	5.4	21.5	880.8	650.5	299.7	17.5	1.000206
10500.0	691.7	4.3	27.2	867.4	649.3	298.5	17.7	1.000204
11000.0	678.8	3.4	30.8	853.9	648.3	295.3	17.5	1.000202
11500.0	666.1	2.6	30.3	840.6	647.3	291.1	17.4	1.000198
12000.0	653.7	1.7	29.8	827.8	646.2	286.7	17.4	1.000195
12500.0	641.4	.8	29.2	814.7	645.2	282.2	17.5	1.000191
13000.0	629.4	-1.1	25.9	802.2	644.0	279.2	18.4	1.000187
13500.0	617.5	-1.0	20.2	789.9	642.9	277.1	19.5	1.000182
14000.0	605.8	-2.0	15.2	777.9	641.7	275.3	20.9	1.000177
14500.0	594.2	-3.2	17.4	766.3	640.3	273.9	22.6	1.000175
15000.0	582.8	-4.5	22.6	755.2	638.8	271.4	23.2	1.000173
15500.0	571.6	-6.1	34.0	744.9	637.0	268.3	23.3	1.000173
16000.0	560.4	-7.1	33.8	733.4	635.6	265.2	23.0	1.000170
16500.0	549.5	-8.2	33.7	722.0	634.3	262.0	22.5	1.000167
17000.0	538.7	-9.3	33.6	710.8	633.0	257.1	26.6	1.000164
17500.0	528.2	-10.4	33.4	699.8	631.7	253.4	31.6	1.000161
18000.0	517.9	-11.5	33.3	689.0	630.4	250.4	33.7	1.000158

STATION ALTITUDE 3997.30 FEET MSL
14 DEC. 77 1500 HRS MST
ASCENSION NO. 178

UPPER AIR DATA
3480060178
S M R
TABLE IX. (CONT)

GEODETIC COORDINATES
32.48034 LAT NEG
106.42307 LONG NEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
18500.0	507.7	-12.6	-25.4	33.1	676.4	629.1	247.9	34.0	1.000155
19000.0	497.7	-13.6	-26.5	32.8	667.6	627.7	245.6	31.2	1.000153
19500.0	487.8	-14.7	-27.7	32.1	657.2	626.4			1.000150
20000.0	478.0	-15.8	-28.8	31.4	640.8	625.1			1.000147
20500.0	468.4	-16.9	-30.0	30.7	636.5	623.6			1.000145
21000.0	459.0	-18.0	-31.2	30.0	626.5	622.4			1.000142

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STATION ALTITUDE 3997.30 FEET MSL
14 DEC. 77
ASCENSION NO. 176

MANDATORY LEVELS
3480000176
S M R
TABLE X.

GEODETIC COORDINATES
32.48034 LAT NEG
106.42307 LON NEG

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PRESSURE GEOPOTENTIAL		TEMPERATURE		RFL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	PFRCT	DIRECTION DEGREES(TN)	SPEED KNOTS	
850.0	4923.	13.4	-10.4	18.	297.1	.9	
800.0	6583.	10.0	-13.9	17.	298.2	3.4	
750.0	8327.	6.7	-16.8	17.	300.9	14.2	
700.0	10183.	4.9	-14.5	23.	299.3	17.6	
650.0	12153.	1.4	-14.4	30.	285.2	17.4	
600.0	14252.	-2.6	-24.7	16.	274.5	21.8	
550.0	16491.	-8.2	-21.3	34.	261.9	22.5	
500.0	18690.	-13.4	-26.2	33.	246.1	31.7	